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no. 102

UNITED STATES NAVAL OBSERVATORY

CIRCULAR NO. 102

U. S. Naval Observatory, Washington, D. C. 20390 September 1, 1964

Total Solar Eclipse of 30 May 1965

by

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and

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U.S. NAVAL OBSERVATORY
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GENERAL INFORMATION

The path of the total phase of the eclipse of 30 May 1965 touches the earth at sunrise in the Tasman Sea, and continues in a northeasterly direction across North Island, New Zealand. It passes south of the Kermadec Islands, crossing only Havre Rock and L'Esperance Rock at approximately 19^h43^m U.T. It then passes through the Cook Islands, being total at Hervey Island and Takutea Island at approximately 20^h03^m U.T.

The path continues northeasterly through the Society Islands, crossing Scilly and Bellingshausen at approximately 20^h12^m U.T. Next, passing north of the Tuamotu Archipelago, and the Marquesas Islands, the eclipse reaches maximum duration ($5^m20^s.4$) at latitude - $2^\circ05'.7$, longitude +$132^\circ57'.7$.

The path of the total phase then passes south of the Galapagos Islands, and strikes the coast of Peru south of Trujillo where it leaves the earth at sunset.

Partial phases of the eclipse of greater or less magnitude, decreasing with distance from the path of total eclipse will be visible generally over New Zealand, most of the island groups of the South Pacific, Central America, and the northwestern and western portions of South America.

The predictions in this *Circular* are derived from the basic data given in the American Ephemeris and Nautical Almanac for the Year 1965. The arguments are given in Universal Time, and the longitudes are referred to the Greenwich meridian. The value of ΔT used in the computations is

GENERAL INFORMATION *(Continued)*

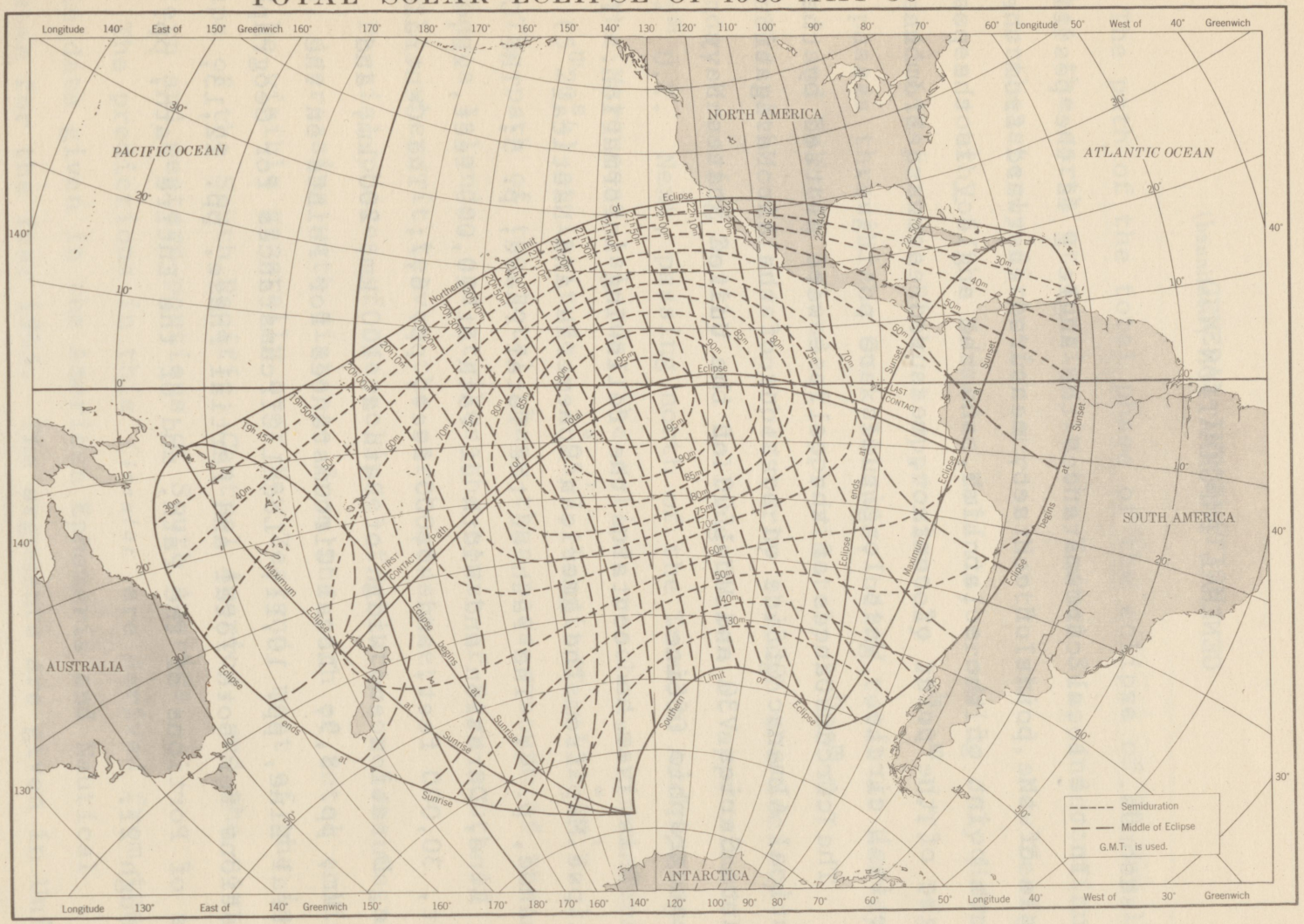
35 seconds.

In the local circumstances the angle P is the position angle of the point of contact, measured eastward from the north point of the solar limb, and the angle V is the position angle of the point of contact, measured eastward from the vertical circle. West longitudes are positive.

The circumstances of the eclipse were plotted by the Nautical Almanac Office on portions of the Air Navigation Charts Series V30 and HO 1500 of the United States Navy Oceanographic Office.

This *Circular* contains the following information: The Eclipse Map from The American Ephemeris and Nautical Almanac, p. 4; The Path of the Total Phase, p. 5; The Central Line, Duration and Width of Path at 10,000 feet, 20,000 feet, 30,000 feet, and 40,000 feet, pp. 6,7; The Central Line, Duration and Width of Path at 100 km, 200 km, and 300 km, pp. 8,9; Local Circumstances for Points on the Central Line, pp. 10,11; Local Circumstances for Geographic Locations for both Total and Partial Phase, pp. 12,13; Maps of Portions of the Path, and of the Entire Path, pp. 14 through 21.

TOTAL SOLAR ECLIPSE OF 1965 MAY 30



PATH OF THE TOTAL PHASE

Universal Time	Northern Limit		Central Line		Southern Limit	
	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
h m	° ′	° ′	° ′	° ′	° ′	° ′
Limit	-35 44	-170 43	-36 18	-171 00	-36 51	-171 17
19 42	33 26.6	175 51.1	35 04.9	173 48.1	.. .. .	... .. .
43	31 29.0	-179 51.6	32 31.9	-179 14.1	33 41.5	-178 21.1
44	30 09.2	+177 35.0	31 05.1	+177 54.9	32 04.4	+178 22.2
45	29 04.2	175 35.5	29 56.8	175 46.6	30 51.8	176 02.7
46	28 08.0	173 55.5	28 58.6	174 01.0	29 51.0	174 10.4
19 48	-26 31.7	+171 10.9	-27 19.9	+171 09.5	-28 09.5	+171 10.8
50	25 09.2	168 56.0	25 56.0	168 50.4	26 44.0	168 46.8
52	23 55.9	167 00.4	24 41.8	166 51.7	25 28.9	166 44.9
54	22 49.3	165 18.4	23 34.6	165 07.5	24 21.0	164 58.2
56	21 47.9	163 46.7	22 32.8	163 34.1	23 18.7	163 22.8
58	20 50.6	162 23.1	21 35.3	162 09.0	22 20.9	161 56.2
20 00	-19 56.9	+161 06.0	-20 41.4	+160 50.8	-21 26.8	+160 36.7
05	17 54.7	158 15.1	18 39.0	157 57.6	19 24.0	157 41.1
10	16 05.8	155 47.0	16 50.1	155 27.9	17 35.1	155 09.7
15	14 27.2	153 34.9	15 11.7	153 14.8	15 56.8	152 55.4
20	12 56.9	151 34.9	13 41.7	151 13.9	14 27.0	150 53.6
25	11 33.5	149 43.9	12 18.6	149 22.3	13 04.3	149 01.3
20 30	-10 16.1	+147 59.9	-11 01.7	+147 37.9	-11 47.7	+147 16.4
35	9 04.0	146 21.4	9 50.0	145 59.1	10 36.5	145 37.4
40	7 56.6	144 47.1	8 43.1	144 24.8	9 30.0	144 02.8
45	6 53.6	143 16.2	7 40.5	142 53.8	8 28.0	142 31.8
50	5 54.6	141 47.9	6 42.1	141 25.5	7 29.9	141 03.5
55	4 59.3	140 21.3	5 47.4	139 59.1	6 35.7	139 37.3
21 00	- 4 07.7	+138 56.1	- 4 56.3	+138 34.1	- 5 45.1	+138 12.4
05	3 19.6	137 31.6	4 08.6	137 09.9	4 58.0	136 48.5
10	2 34.8	136 07.3	3 24.4	135 46.1	4 14.2	135 25.0
15	1 53.3	134 42.9	2 43.4	134 22.1	3 33.7	134 01.5
20	1 15.1	133 17.9	2 05.7	132 57.7	2 56.4	132 37.5
25	0 40.2	131 51.9	1 31.2	131 32.2	2 22.4	131 12.6
21 30	- 0 08.6	+130 24.4	- 1 00.0	+130 05.4	- 1 51.6	+129 46.4
35	+ 0 19.6	128 55.1	0 32.1	128 36.8	1 24.0	128 18.4
40	0 44.3	127 23.5	- 0 07.7	127 05.9	0 59.9	126 48.2
45	1 05.4	125 49.1	+ 0 13.2	125 32.3	0 39.2	125 15.2
50	1 22.8	124 11.3	0 30.4	123 55.2	0 22.1	123 38.9
55	1 36.2	122 29.5	0 43.7	122 14.2	- 0 08.9	121 58.7
22 00	- + 1 45.3	+120 42.9	+ 0 52.8	+120 28.5	+ 0 00.1	+120 13.6
05	1 49.8	118 50.7	0 57.3	118 37.0	0 04.7	118 22.8
10	1 49.2	116 51.7	0 56.8	116 38.7	+ 0 04.3	116 25.1
15	1 42.8	114 44.4	0 50.7	114 32.1	- 0 01.7	114 19.0
20	1 29.9	112 26.9	0 38.0	112 15.1	0 14.1	112 02.4
25	1 09.1	109 56.5	+ 0 17.6	109 45.0	0 34.2	109 32.5
22 30	+ 0 38.8	+107 09.0	- 0 12.4	+106 57.5	- 1 03.9	+106 44.9
35	- 0 03.9	103 58.0	0 54.8	103 46.0	1 46.0	103 32.6
40	1 04.1	100 11.6	1 54.9	99 58.0	2 46.0	99 42.7
22 42	- 1 35.2	+ 98 26.3	- 2 26.0	+ 98 11.4	- 3 17.3	+ 97 54.7
44	2 12.0	96 28.6	3 03.0	96 12.0	3 54.6	95 53.2
46	2 56.5	94 13.7	3 48.1	93 54.2	4 40.4	93 32.0
48	3 52.5	91 32.3	4 45.4	91 07.7	5 39.5	90 39.5
22 49	- 4 27.3	+ 89 55.9	- 5 21.5	+ 89 27.0	- 6 17.2	+ 88 53.4
50	5 09.4	88 02.2	6 06.0	87 26.1	7 04.8	86 43.3
51	6 04.2	85 38.3	7 06.2	84 47.2	8 13.3	83 41.8
52	7 31.9	81 55.1	9 07.7	79 37.7	.. .. .	... .. .
Limit	- 9 19	+ 77 30	- 9 55	+ 77 41	-10 31	+ 77 51

CENTRAL LINE OF TOTAL ECLIPSE

Universal Time	10,000 Feet		20,000 Feet		30,000 Feet		40,000 Feet	
	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
h m	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
19 42	-34 48.9	-174 22.8	-34 35.1	-174 52.2	-34 22.8	-175 18.1	-34 11.6	-175 41.4
43	32 25.7	-179 25.7	32 19.6	-179 37.0	32 13.7	-179 48.0	32 07.8	-179 58.8
44	31 00.4	+177 46.8	30 55.7	+177 38.7	30 51.1	+177 30.8	30 46.5	+177 23.0
45	29 52.8	175 40.1	29 48.9	175 33.7	29 44.9	175 27.3	29 41.0	175 21.0
46	28 55.0	173 55.5	28 51.5	173 50.0	28 48.0	173 44.6	28 44.5	173 39.3
19 48	-27 16.8	+171 05.2	-27 13.9	+171 00.9	-27 10.9	+170 56.7	-27 07.9	+170 52.5
50	25 53.3	168 46.8	25 50.7	168 43.2	25 48.1	168 39.7	25 45.4	168 36.2
52	24 39.4	166 48.7	24 37.0	166 45.6	24 34.6	166 42.6	24 32.2	166 39.5
54	23 32.4	165 04.8	23 30.2	165 02.1	23 28.0	164 59.4	23 25.8	164 56.8
56	22 30.8	163 31.7	22 28.7	163 29.3	22 26.6	163 26.9	22 24.5	163 24.5
58	21 33.4	162 06.9	21 31.4	162 04.7	21 29.5	162 02.5	21 27.5	162 00.4
20 00	-20 39.6	+160 48.8	-20 37.7	+160 46.8	-20 35.9	+160 44.9	-20 34.0	+160 42.9
05	18 37.3	157 56.0	18 35.7	157 54.5	18 34.0	157 52.9	18 32.4	157 51.3
10	16 48.6	155 26.6	16 47.1	155 25.3	16 45.6	155 24.0	16 44.2	155 22.7
15	15 10.3	153 13.7	15 09.0	153 12.6	15 07.6	153 11.5	15 06.2	153 10.4
20	13 40.4	151 13.0	13 39.1	151 12.0	13 37.9	151 11.1	13 36.6	151 10.2
25	12 17.5	149 21.5	12 16.3	149 20.7	12 15.1	149 19.9	12 13.9	149 19.2
20 30	-11 00.5	+147 37.2	-10 59.4	+147 36.6	-10 58.3	+147 35.9	-10 57.2	+147 35.3
35	9 48.9	145 58.6	9 47.9	145 58.0	9 46.8	145 57.5	9 45.8	145 56.9
40	8 42.1	144 24.3	8 41.1	144 23.9	8 40.1	144 23.4	8 39.1	144 23.0
45	7 39.6	142 53.5	7 38.6	142 53.1	7 37.7	142 52.8	7 36.8	142 52.4
50	6 41.2	141 25.3	6 40.2	141 25.0	6 39.3	141 24.7	6 38.4	141 24.5
55	5 46.5	139 59.0	5 45.6	139 58.8	5 44.8	139 58.6	5 43.9	139 58.5
21 00	- 4 55.4	+138 34.0	- 4 54.6	+138 33.9	- 4 53.8	+138 33.9	- 4 52.9	+138 33.8
05	4 07.8	137 09.9	4 07.0	137 09.9	4 06.2	137 09.9	4 05.4	137 09.9
10	3 23.6	135 46.1	3 22.8	135 46.2	3 22.0	135 46.3	3 21.3	135 46.4
15	2 42.6	134 22.3	2 41.9	134 22.4	2 41.1	134 22.6	2 40.4	134 22.7
20	2 04.9	132 57.9	2 04.2	132 58.1	2 03.5	132 58.3	2 02.7	132 58.5
25	1 30.5	131 32.5	1 29.8	131 32.8	1 29.0	131 33.1	1 28.3	131 33.4
21 30	- 0 59.3	+130 05.8	- 0 58.6	+130 06.2	- 0 57.9	+130 06.6	- 0 57.2	+130 07.0
35	0 31.4	128 37.3	0 30.7	128 37.7	0 30.0	128 38.2	0 29.3	128 38.7
40	- 0 07.0	127 06.5	- 0 06.3	127 07.0	- 0 05.6	127 07.6	- 0 04.9	127 08.1
45	+ 0 13.9	125 32.9	+ 0 14.6	125 33.5	+ 0 15.3	125 34.2	+ 0 16.0	125 34.8
50	0 31.1	123 56.0	0 31.8	123 56.7	0 32.5	123 57.4	0 33.3	123 58.2
55	0 44.4	122 15.1	0 45.1	122 15.9	0 45.9	122 16.7	0 46.6	122 17.6
22 00	+ 0 53.5	+120 29.4	+ 0 54.3	+120 30.4	+ 0 55.0	+120 31.3	+ 0 55.7	+120 32.2
05	0 58.1	118 38.1	0 58.8	118 39.1	0 59.6	118 40.2	1 00.4	118 41.3
10	0 57.6	116 39.9	0 58.4	116 41.1	0 59.2	116 42.3	1 00.0	116 43.5
15	0 51.5	114 33.4	0 52.3	114 34.8	0 53.1	114 36.1	0 54.0	114 37.5
20	0 38.9	112 16.6	0 39.8	112 18.2	0 40.6	112 19.7	0 41.5	112 21.2
25	+ 0 18.5	109 46.7	+ 0 19.5	109 48.5	+ 0 20.4	109 50.2	+ 0 21.4	109 52.0
22 30	- 0 11.3	+106 59.5	- 0 10.3	+107 01.6	- 0 09.2	+107 03.6	- 0 08.1	+107 05.7
35	0 53.6	103 48.4	0 52.3	103 50.8	0 51.1	103 53.2	0 49.9	103 55.6
40	1 53.4	100 01.0	1 52.0	100 04.0	1 50.5	100 07.0	1 49.1	100 09.9
22 42	- 2 24.4	+ 98 14.8	- 2 22.9	+ 98 18.1	- 2 21.3	+ 98 21.4	- 2 19.7	+ 98 24.7
44	3 01.2	96 15.7	2 59.5	96 19.5	2 57.7	96 23.3	2 56.0	96 27.0
46	3 46.0	93 58.6	3 44.0	94 03.0	3 42.0	94 07.4	3 40.0	94 11.8
48	4 42.9	91 13.2	4 40.5	91 18.7	4 38.0	91 24.1	+ 35.6	91 29.5
22 49	- 5 18.7	+ 89 33.3	- 5 15.9	+ 89 39.7	- 5 13.1	+ 89 45.9	- 5 10.3	+ 89 52.1
50	6 02.6	87 33.9	5 59.2	87 41.7	5 55.8	87 49.3	5 52.5	87 56.8
51	7 01.5	84 58.2	6 56.9	85 08.8	6 52.4	85 19.2	6 48.0	85 29.4
52	- 8 52.7	+ 80 14.0	- 8 40.6	+ 80 43.2	- 8 30.2	+ 81 08.3	- 8 20.8	+ 81 30.6

DURATION OF TOTALITY AND WIDTH OF PATH ON CENTRAL LINE

Universal Time	10,000 Feet		20,000 Feet		30,000 Feet		40,000 Feet	
	Duration	Width of Path	Duration	Width of Path	Duration	Width of Path	Duration	Width of Path
h m	m s	mi	m s	mi	m s	mi	m s	mi
19 42	2 18.2	85	2 19.2	85	2 20.1	85	2 20.9	85
43	2 29.2	87	2 29.7	87	2 30.1	87	2 30.5	87
44	2 36.0	89	2 36.4	89	2 36.7	90	2 37.0	90
45	2 41.6	90	2 41.9	90	2 42.1	90	2 42.4	90
46	2 46.4	92	2 46.6	92	2 46.9	92	2 47.2	92
19 48	2 54.8	94	2 55.0	94	2 55.3	94	2 55.5	94
50	3 02.2	95	3 02.4	95	3 02.6	95	3 02.8	95
52	3 08.9	97	3 09.1	97	3 09.3	97	3 09.5	97
54	3 15.1	98	3 15.3	98	3 15.5	98	3 15.7	98
56	3 21.0	99	3 21.2	99	3 21.3	99	3 21.5	99
58	3 26.5	101	3 26.7	101	3 26.9	101	3 27.0	101
20 00	3 31.8	101	3 32.0	101	3 32.1	101	3 32.3	101
05	3 44.1	104	3 44.3	104	3 44.4	104	3 44.6	104
10	3 55.4	106	3 55.5	106	3 55.7	106	3 55.8	106
15	4 05.7	109	4 05.9	109	4 06.1	109	4 06.2	109
20	4 15.4	110	4 15.5	110	4 15.7	110	4 15.8	110
25	4 24.3	112	4 24.4	112	4 24.6	112	4 24.7	112
20 30	4 32.5	113	4 32.7	113	4 32.8	113	4 33.0	113
35	4 40.1	115	4 40.3	115	4 40.4	115	4 40.6	115
40	4 47.0	117	4 47.2	117	4 47.3	117	4 47.5	117
45	4 53.2	118	4 53.4	118	4 53.6	118	4 53.7	118
50	4 58.8	119	4 58.9	119	4 59.1	119	4 59.2	119
55	5 03.6	120	5 03.8	120	5 03.9	120	5 04.1	120
21 00	5 07.7	121	5 07.9	121	5 08.0	121	5 08.2	121
05	5 11.0	123	5 11.2	123	5 11.3	123	5 11.5	123
10	5 13.5	124	5 13.7	124	5 13.8	124	5 14.0	124
15	5 15.2	124	5 15.4	124	5 15.5	124	5 15.7	124
20	5 16.0	125	5 16.2	125	5 16.4	124	5 16.5	124
25	5 16.0	125	5 16.2	125	5 16.3	125	5 16.5	125
21 30	5 15.1	125	5 15.3	125	5 15.4	125	5 15.6	125
35	5 13.3	126	5 13.5	125	5 13.6	125	5 13.8	125
40	5 10.5	125	5 10.7	125	5 10.9	125	5 11.1	125
45	5 06.9	125	5 07.1	125	5 07.2	125	5 07.4	125
50	5 02.3	124	5 02.5	124	5 02.7	124	5 02.8	124
55	4 56.8	124	4 57.0	124	4 57.2	124	4 57.3	124
22 00	4 50.4	122	4 50.6	122	4 50.7	122	4 50.9	122
05	4 43.1	120	4 43.2	120	4 43.4	120	4 43.6	120
10	4 34.8	119	4 35.0	119	4 35.2	119	4 35.3	119
15	4 25.6	117	4 25.8	117	4 26.0	117	4 26.1	117
20	4 15.5	115	4 15.7	115	4 15.8	115	4 16.0	115
25	4 04.3	113	4 04.5	113	4 04.7	113	4 04.9	113
22 30	3 52.1	110	3 52.3	110	3 52.5	110	3 52.7	110
35	3 38.6	107	3 38.7	107	3 38.9	107	3 39.1	107
40	3 23.3	103	3 23.5	103	3 23.7	103	3 23.9	103
22 42	3 16.5	101	3 16.8	101	3 17.0	101	3 17.2	101
44	3 09.2	100	3 09.5	100	3 09.7	100	3 09.9	100
46	3 01.2	97	3 01.5	97	3 01.8	97	3 02.0	97
48	2 52.1	95	2 52.4	95	2 52.7	95	2 53.0	95
22 49	2 46.9	94	2 47.2	94	2 47.5	94	2 47.8	94
50	2 40.9	92	2 41.3	93	2 41.7	93	2 42.0	93
51	2 33.6	90	2 34.1	90	2 34.5	90	2 35.0	90
52	2 21.3	86	2 22.5	87	2 23.5	87	2 24.4	87

CENTRAL LINE OF TOTAL ECLIPSE

Universal Time	100 Km		200 Km		300 Km	
	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
h m	° ′	° ′	° ′	° ′	° ′	° ′
19 42	-31 00.5	+178 15.1	-28 44.8	+174 27.7	-26 57.6	+171 41.4
43	29 50.4	176 02.3	27 51.9	172 53.6	26 13.5	170 26.6
44	28 51.2	174 14.3	27 04.2	171 31.0	25 32.6	169 18.7
45	27 59.0	172 41.9	26 20.4	170 17.0	24 54.2	168 16.4
46	27 11.6	171 20.4	25 39.7	169 09.7	24 18.0	167 18.5
19 48	-25 47.5	+169 00.3	-24 25.3	+167 10.1	-23 10.9	+165 33.8
50	24 33.2	167 01.2	23 18.2	165 25.7	22 09.2	164 00.5
52	23 26.1	165 16.9	22 16.5	163 52.4	21 12.1	162 36.0
54	22 24.4	163 43.6	21 19.3	162 27.7	20 18.5	161 18.6
56	21 27.0	162 18.8	20 25.6	161 10.1	19 28.0	160 06.9
58	20 33.2	161 00.8	19 35.0	159 58.1	18 40.1	159 00.1
20 00	-19 42.5	+159 48.5	-18 47.0	+158 50.9	-17 54.5	+157 57.3
05	17 46.3	157 06.9	16 56.4	156 19.5	16 08.9	155 35.0
10	16 02.3	154 45.8	15 16.7	154 06.1	14 33.2	153 28.5
15	14 27.7	152 39.4	13 45.6	152 05.8	13 05.3	151 33.9
20	13 00.8	150 44.0	12 21.7	150 15.6	11 44.1	149 48.4
25	11 40.5	148 57.1	11 03.8	148 33.0	10 28.6	148 10.0
20 30	-10 25.8	+147 16.8	- 9 51.3	+146 56.6	- 9 18.1	+146 37.2
35	9 16.1	145 41.7	8 43.5	145 24.9	8 12.1	145 08.8
40	8 11.0	144 10.6	7 40.0	143 57.0	7 10.2	143 43.9
45	7 10.0	142 42.7	6 40.5	142 32.1	6 12.1	142 21.8
50	6 12.9	141 17.3	5 44.7	141 09.4	5 17.5	141 01.8
55	5 19.4	139 53.7	4 52.4	139 48.4	4 26.3	139 43.3
21 00	- 4 29.4	+138 31.3	- 4 03.4	+138 28.6	- 3 38.3	+138 25.9
05	3 42.7	137 09.7	3 17.6	137 09.4	2 53.3	137 09.2
10	2 59.2	135 48.3	2 34.9	135 50.5	2 11.4	135 52.6
15	2 18.9	134 26.9	1 55.3	134 31.5	1 32.5	134 35.9
20	1 41.8	133 04.9	1 18.8	133 11.9	0 56.5	133 18.7
25	1 07.8	131 42.0	0 45.2	131 51.5	- 0 23.4	132 00.6
21 30	- 0 37.0	+130 17.8	- 0 14.7	+130 29.7	+ 0 06.8	+130 41.3
35	- 0 09.4	128 51.8	+ 0 12.7	129 06.3	0 33.9	129 20.4
40	+ 0 15.0	127 23.7	0 36.9	127 40.9	0 58.0	127 57.4
45	0 35.9	125 52.9	0 57.8	126 12.8	1 18.9	126 32.1
50	0 53.3	124 19.0	1 15.3	124 41.8	1 36.[illegible]	125 03.9
55	1 06.9	122 41.2	1 29.2	123 07.2	1 50.7	123 32.2
22 00	+ 1 16.5	+120 59.0	+ 1 39.3	+121 28.3	+ 2 01.2	+121 56.6
05	1 21.7	119 11.4	1 45.2	119 44.4	2 07.7	120 16.2
10	1 22.2	117 17.4	1 46.6	117 54.6	2 09.9	118 30.2
15	1 17.4	115 15.7	1 42.9	115 57.5	2 07.3	116 37.5
20	1 06.4	113 04.5	1 33.5	113 51.6	1 59.4	114 36.7
25	0 48.3	110 41.3	1 17.5	111 34.8	1 45.3	112 25.8
22 30	+ 0 21.5	+108 02.6	+ 0 53.5	+109 04.1	+ 1 23.8	+110 02.2
35	- 0 16.3	105 02.8	+ 0 19.6	106 14.6	0 53.2	107 21.9
40	1 09.4	101 32.3	- 0 27.7	102 58.7	+ 0 10.9	104 18.7
22 42	- 1 36.6	+ 99 55.6	- 0 51.6	+101 30.1	- 0 10.3	+102 56.7
44	2 08.2	98 09.0	1 19.1	99 53.5	0 34.6	101 28.2
46	2 45.8	96 09.2	1 51.3	98 06.8	1 02.6	99 51.7
48	3 31.7	93 50.5	2 29.6	96 06.6	1 35.3	98 04.8
22 49	- 3 59.0	+ 92 31.1	- 2 51.7	+ 94 59.7	- 1 53.8	+ 97 06.4
50	4 30.4	91 01.9	3 16.3	93 46.8	2 14.2	96 04.0
51	5 07.6	89 19.0	3 44.2	92 26.4	2 36.7	94 56.6
52	- 5 54.0	+ 87 14.0	- 4 16.5	+ 90 55.7	- 3 01.9	+ 93 43.0

DURATION OF TOTALITY AND WIDTH OF PATH ON CENTRAL LINE

Universal Time	100 Km		200 Km		300 Km	
	Duration	Width of Path	Duration	Width of Path	Duration	Width of Path
h m	m s	mi	m s	mi	m s	mi
19 42	2 34.6	87	2 44.8	88	2 53.1	89
43	2 40.5	89	2 49.4	90	2 57.2	90
44	2 45.5	90	2 53.7	90	3 01.1	90
45	2 50.0	91	2 57.7	91	3 04.7	91
46	2 54.2	92	3 01.4	92	3 08.2	92
19 48	3 01.7	94	3 08.4	94	3 14.8	94
50	3 08.6	95	3 14.9	95	3 21.0	94
52	3 15.0	97	3 21.0	96	3 26.9	96
54	3 20.9	97	3 26.7	97	3 32.4	97
56	3 26.6	99	3 32.2	98	3 37.8	97
58	3 32.0	100	3 37.5	99	3 43.0	98
20 00	3 37.1	101	3 42.6	100	3 48.0	99
05	3 49.2	103	3 54.5	102	3 59.8	101
10	4 00.4	105	4 05.5	105	4 10.7	103
15	4 10.7	107	4 15.8	106	4 21.0	105
20	4 20.3	109	4 25.4	108	4 30.6	107
25	4 29.2	111	4 34.3	109	4 39.5	109
20 30	4 37.5	113	4 42.6	111	4 47.8	109
35	4 45.1	113	4 50.3	113	4 55.6	111
40	4 52.0	115	4 57.3	114	5 02.6	113
45	4 58.3	117	5 03.6	115	5 09.0	113
50	5 03.9	118	5 09.3	117	5 14.7	115
55	5 08.8	119	5 14.2	117	5 19.7	116
21 00	5 12.9	120	5 18.4	119	5 24.0	117
05	5 16.3	121	5 21.9	120	5 27.5	118
10	5 18.8	122	5 24.5	120	5 30.2	119
15	5 20.6	123	5 26.3	121	5 32.1	120
20	5 21.5	124	5 27.2	122	5 33.1	120
25	5 21.5	124	5 27.3	122	5 33.2	120
21 30	5 20.6	124	5 26.4	122	5 32.4	120
35	5 18.8	124	5 24.7	122	5 30.7	121
40	5 16.1	124	5 22.0	122	5 28.0	120
45	5 12.5	124	5 18.4	122	5 24.4	120
50	5 07.9	123	5 13.8	121	5 19.9	120
55	5 02.4	122	5 08.4	120	5 14.4	119
22 00	4 56.0	121	5 01.9	120	5 08.0	118
05	4 48.7	120	4 54.6	118	5 00.6	117
10	4 40.4	118	4 46.4	117	4 52.4	116
15	4 31.3	116	4 37.2	115	4 43.2	114
20	4 21.2	114	4 27.1	113	4 33.2	112
25	4 10.1	112	4 16.1	111	4 22.2	110
22 30	3 58.0	109	4 04.1	109	4 10.2	108
35	3 44.6	106	3 50.9	105	3 57.2	105
40	3 29.8	103	3 36.4	102	3 42.9	102
22 42	3 23.3	101	3 30.1	101	3 36.8	101
44	3 16.4	100	3 23.4	99	3 30.3	99
46	3 08.9	97	3 16.4	97	3 23.6	97
48	3 00.7	96	3 08.7	96	3 16.3	96
22 49	2 56.2	94	3 04.6	95	3 12.5	95
50	2 51.3	94	3 00.3	94	3 08.5	94
51	2 45.8	92	2 55.7	93	3 04.3	94
52	2 39.5	90	2 50.6	92	2 59.8	92

LOCAL CIRCUMSTANCES FOR POINTS ON CENTRAL LINE

Universal Time	Central Line Latitude	Central Line Longitude	First Contact Universal Time	First Contact P	First Contact V	Second Contact Universal Time	Second Contact P	Second Contact V
h m	° ′	° ′	h m s	°	°	h m s	°	°
19 42	-35 04.9	-173 48.1	.. ..	...	...	19 40 50.0	66	195
43	32 31.9	-179 14.1	.. ..	...	...	19 41 44.1	65	194
44	31 05.1	+177 54.9	.. ..	...	...	19 42 40.7	64	194
45	29 56.8	175 46.6	18 42 18.1	245	8	19 43 37.9	64	194
46	28 58.6	174 01.0	18 42 25.8	244	7	19 44 35.4	64	194
19 48	-27 19.9	+171 09.5	18 42 54.5	244	7	19 46 31.1	63	194
50	25 56.0	168 50.4	18 43 34.4	243	6	19 48 27.3	63	194
52	24 41.8	166 51.7	18 44 21.4	243	6	19 50 24.1	62	194
54	23 34.6	165 07.5	18 45 13.4	243	5	19 52 20.8	62	194
56	22 32.8	163 34.1	18 46 09.3	242	5	19 54 17.9	62	194
58	21 35.3	162 09.0	18 47 08.3	242	5	19 56 15.1	61	195
20 00	-20 41.4	+160 50.8	18 48 09.8	242	4	19 58 12.4	61	195
05	18 39.0	157 57.6	18 50 52.4	241	4	20 03 06.2	61	197
10	16 50.1	155 27.9	18 53 44.6	241	4	20 08 00.6	61	198
15	15 11.7	153 14.8	18 56 44.0	241	4	20 12 55.3	61	200
20	13 41.7	151 13.9	18 59 49.6	240	5	20 17 50.4	61	202
25	12 18.6	149 22.3	19 03 00.6	240	5	20 22 45.9	61	205
20 30	-11 01.7	+147 37.9	19 06 16.3	240	6	20 27 41.7	61	208
35	9 50.0	145 59.1	19 09 36.6	240	7	20 32 37.9	61	211
40	8 43.1	144 24.8	19 13 01.1	240	8	20 37 34.3	61	215
45	7 40.5	142 53.8	19 16 30.5	240	9	20 42 31.4	62	219
50	6 42.1	141 25.5	19 20 04.1	241	11	20 47 28.4	62	224
55	5 47.4	139 59.1	19 23 42.5	241	12	20 52 26.1	63	230
21 00	- 4 56.3	+138 34.1	19 27 25.9	241	15	20 57 24.0	63	236
05	4 08.6	137 09.9	19 31 14.8	242	17	21 02 22.4	64	242
10	3 24.4	135 46.1	19 35 09.2	242	20	21 07 20.9	65	249
15	2 43.4	134 22.1	19 39 10.3	243	23	21 12 20.3	66	256
20	2 05.7	132 57.7	19 43 17.9	243	27	21 17 19.6	66	263
25	1 31.2	131 32.2	19 47 33.5	244	32	21 22 19.9	67	271
21 30	- 1 00.0	+130 05.4	19 51 57.2	244	37	21 27 20.3	68	278
35	0 32.1	128 36.8	19 56 30.2	245	43	21 32 21.2	69	284
40	- 0 07.7	127 05.9	20 01 13.1	246	50	21 37 22.6	70	291
45	+ 0 13.2	125 32.3	20 06 07.2	247	58	21 42 24.2	71	297
50	0 30.4	123 55.2	20 11 13.9	248	67	21 47 26.8	72	302
55	0 43.7	122 14.2	20 16 33.7	249	76	21 52 29.5	73	307
22 00	+ 0 52.8	+120 28.5	20 22 08.2	250	85	21 57 32.6	74	312
05	0 57.3	118 37.0	20 27 58.9	251	95	22 02 36.4	75	316
10	0 56.8	116 38.7	20 34 06.9	252	104	22 07 40.6	76	320
15	0 50.7	114 32.1	20 40 33.8	253	113	22 12 45.2	77	324
20	0 38.0	112 15.1	20 47 21.2	255	120	22 17 50.3	78	327
25	+ 0 17.6	109 45.0	20 54 31.0	256	127	22 22 55.9	79	330
22 30	- 0 12.4	+106 57.5	21 02 05.5	257	134	22 28 02.2	80	333
35	0 54.8	103 46.0	21 10 08.3	259	139	22 33 08.9	82	336
40	1 54.9	99 58.0	21 18 46.1	260	144	22 38 16.7	82	339
22 42	- 2 26.0	+ 98 11.4	21 22 26.0	261	146	22 40 20.2	83	339
44	3 03.0	96 12.0	21 26 15.0	261	148	22 42 23.8	83	340
46	3 48.1	93 54.2	21 30 16.9	262	150	22 44 27.8	84	341
48	4 45.4	91 07.7	21 34 37.5	263	152	22 46 32.5	84	342
22 49	- 5 21.5	+ 89 27.0	21 36 58.6	263	153	22 47 35.2	84	343
50	6 06.0	87 26.1	21 39 32.3	263	154	22 48 38.2	84	343
51	7 06.2	84 47.2	21 42 28.7	264	155	22 49 42.0	85	344
52	- 9 07.7	+ 79 37.7	21 46 54.5	264	157	22 50 48.7	85	344

LOCAL CIRCUMSTANCES FOR POINTS ON CENTRAL LINE

Maximum Eclipse: Universal Time h m s	Magnitude	Sun's Alt. °	Sun's Az. °	Third Contact: Universal Time h m s	P °	V °	Fourth Contact: Universal Time h m s	P °	V °	Duration m s	Width of Path mi
19 42 00.0	1.039	3	61	19 43 10.0	246	15	20 46 10.1	65	202	2 20.0	84
19 42 59.9	1.041	8	58	19 44 15.8	245	15	20 50 00.7	64	203	2 31.7	87
19 44 00.0	1.042	11	56	19 45 19.3	244	14	20 52 41.3	64	203	2 38.6	89
19 45 00.0	1.042	13	55	19 46 22.1	244	14	20 55 02.3	63	204	2 44.2	90
19 46 00.0	1.043	15	54	19 47 24.6	243	14	20 57 12.7	63	205	2 49.2	92
19 48 00.0	1.044	19	52	19 49 28.9	243	14	21 01 14.8	62	206	2 57.8	94
19 49 59.9	1.045	22	51	19 51 32.6	243	14	21 05 01.1	62	207	3 05.3	95
19 52 00.1	1.046	24	49	19 53 36.1	242	15	21 08 37.1	62	209	3 12.0	97
19 54 00.0	1.046	26	48	19 55 39.2	242	15	21 12 05.4	62	210	3 18.4	98
19 56 00.0	1.047	28	47	19 57 42.1	242	15	21 15 27.7	62	212	3 24.2	99
19 58 00.1	1.047	30	46	19 59 45.0	241	16	21 18 45.0	61	214	3 29.9	101
20 00 00.0	1.048	32	45	20 01 47.6	241	16	21 21 57.9	61	216	3 35.2	101
20 05 00.1	1.049	36	43	20 06 53.9	241	17	21 29 44.6	61	220	3 47.7	104
20 10 00.1	1.050	40	40	20 11 59.6	241	19	21 37 12.4	61	226	3 59.0	106
20 15 00.0	1.051	43	38	20 17 04.7	241	21	21 44 23.4	62	231	4 09.4	109
20 20 00.0	1.052	47	36	20 22 09.6	241	24	21 51 19.3	62	237	4 19.2	110
20 25 00.0	1.052	49	33	20 27 14.1	241	26	21 58 01.1	62	244	4 28.2	112
20 29 59.9	1.053	52	30	20 32 18.2	241	29	22 04 28.6	63	250	4 36.5	113
20 35 00.0	1.053	54	27	20 37 22.1	241	33	22 10 43.0	63	257	4 44.2	115
20 39 59.9	1.054	57	24	20 42 25.4	241	37	22 16 43.7	64	264	4 51.1	117
20 45 00.1	1.054	59	20	20 47 28.9	242	42	22 22 31.7	65	270	4 57.5	118
20 49 59.9	1.054	60	16	20 52 31.4	242	47	22 28 06.6	65	276	5 03.0	119
20 55 00.1	1.055	62	11	20 57 34.0	243	52	22 33 29.2	66	282	5 07.9	120
21 00 00.0	1.055	63	6	21 02 36.0	243	58	22 38 39.3	67	288	5 12.0	121
21 05 00.1	1.055	64	1	21 07 37.8	244	65	22 43 37.7	68	293	5 15.4	123
21 09 59.9	1.055	65	355	21 12 38.8	245	72	22 48 24.6	69	298	5 17.9	124
21 15 00.1	1.055	65	349	21 17 39.8	245	79	22 53 00.7	70	303	5 19.5	124
21 19 59.8	1.055	65	343	21 22 40.0	246	86	22 57 25.9	71	307	5 20.4	125
21 25 00.1	1.055	65	337	21 27 40.3	247	93	23 01 41.6	72	311	5 20.4	125
21 30 00.1	1.055	64	332	21 32 39.8	248	100	23 05 47.6	72	315	5 19.5	126
21 35 00.1	1.055	63	326	21 37 38.9	249	107	23 09 44.5	73	318	5 17.7	126
21 40 00.1	1.055	62	322	21 42 37.6	250	113	23 13 32.7	74	322	5 15.0	125
21 44 59.8	1.055	60	317	21 47 35.4	251	119	23 17 12.8	75	325	5 11.2	125
21 50 00.1	1.054	58	314	21 52 33.4	252	124	23 20 45.4	76	327	5 06.6	124
21 55 00.1	1.054	56	310	21 57 30.6	253	129	23 24 10.4	77	330	5 01.1	124
21 59 59.9	1.054	54	308	22 02 27.2	254	133	23 27 28.2	78	333	4 54.6	122
22 04 59.9	1.053	51	305	22 07 23.5	255	137	23 30 39.2	79	335	4 47.1	121
22 10 00.0	1.053	49	303	22 12 19.4	256	141	23 33 43.4	79	337	4 38.8	119
22 14 59.9	1.052	46	301	22 17 14.7	257	145	23 36 40.4	80	339	4 29.5	117
22 19 59.9	1.051	43	300	22 22 09.6	258	148	23 39 30.3	81	341	4 19.3	115
22 24 59.9	1.051	39	298	22 27 04.0	259	151	23 42 12.1	82	343	4 08.1	113
22 30 00.0	1.050	35	297	22 31 57.8	260	154	23 44 44.6	82	344	3 55.6	110
22 34 59.9	1.049	31	296	22 36 50.9	261	156	23 47 05.3	83	346	3 42.0	107
22 39 59.9	1.047	26	296	22 41 43.2	262	159	23 49 09.8	84	347	3 26.5	103
22 42 00.1	1.047	24	295	22 43 39.9	263	160	23 49 52.9	84	348	3 19.7	101
22 43 59.9	1.046	21	295	22 45 36.1	263	161	23 50 30.5	84	348	3 12.3	100
22 45 59.9	1.045	19	295	22 47 32.0	264	162	23 51 00.5	85	349	3 04.2	97
22 48 00.0	1.044	15	294	22 49 27.5	264	163	23 51 18.5	85	349	2 55.0	95
22 49 00.0	1.043	13	294	22 50 24.8	264	163	.. ..	...	...	2 49.6	94
22 50 00.0	1.043	11	294	22 51 21.8	264	163	.. ..	...	...	2 43.6	92
22 51 00.0	1.042	8	293	22 52 18.0	265	164	.. ..	...	...	2 36.0	90
22 52 00.1	1.040	2	293	22 53 11.4	265	165	.. ..	...	...	2 22.7	86

LOCAL CIRCUMSTANCES

Geographic Locations	Latitude	Longitude	First Contact Universal Time	P	V	Second Contact Universal Time	P	V
	° ′	° ′	h m s	°	°	h m s	°	°
New Zealand (Page 14)								
Kaitaia	-35 08.0	-173 18.0	.. ..	...	...	19 40 46.0	51	181
Kaikohe	-35 25.0	-173 49.0	.. ..	...	...	19 41 07.9	95	225
Auckland	-36 55.0	-174 45.0	.. ..	...	...			
Kermadec Islands (Page15)								
Havre Rock	-31 17.0	+178 56.0	.. ..	...	...	19 42 21.2	38	168
L'Esperance Rock	-31 26.0	+178 54.0	.. ..	...	...	19 42 18.2	52	182
Curtis	-30 35.0	+178 36.0	18 42 07.8	244	6			
Macauley	-30 13.0	+178 33.0	18 42 03.8	243	6			
Raoul	-29 15.0	+177 52.0	18 41 58.0	242	4			
Lower Cook Islands (Page 16)								
Aitutaki	-18 52.0	+159 46.0	18 49 28.2	240	2			
Rarotonga	-21 15.0	+159 45.0	18 48 48.3	244	8			
Hervey	-19 21.0	+158 58.0	18 49 51.8	241	4	20 01 18.8	60	195
Takutea	-19 48.0	+158 19.0	18 50 13.4	243	6	20 03 17.1	133	269
Atiu	-20 00.0	+158 07.0	18 50 19.9	243	7			
Mangaia	-21 56.0	+157 56.0	18 50 09.8	246	12			
Mitiaro	-19 58.0	+157 43.0	18 50 40.0	244	8			
Mauke	-20 08.0	+157 23.0	18 50 54.5	244	9			
Archipel De La Societe (Page 17)								
Scilly	-16 30.0	+154 40.0	18 54 38.7	241	5	20 09 36.5	76	214
Bellingshausen	-15 48.0	+154 33.0	18 55 07.0	240	3	20 10 22.4	39	177
Mopelia	-16 49.0	+153 55.0	18 55 14.2	242	7			
Maupiti	-16 27.0	+152 15.0	18 57 10.7	244	9			
Bora Bora	-16 30.0	+151 45.0	18 57 43.7	244	10			
Raiatea	-16 50.0	+151 30.0	18 57 53.4	245	11			
Huahine	-16 45.0	+151 00.0	18 58 31.6	245	12			
Moorea	-17 30.0	+149 50.0	18 59 46.3	248	16			
Papeete, Tahiti	-17 32.0	+149 34.0	19 00 07.3	248	17			
Iles Marquises (Page 18)								
Eiao	- 8 00.0	+140 40.0	19 20 11.6	243	16			
Nukuhiva	- 8 56.0	+140 00.0	19 20 41.0	246	19			
Huapu	- 9 25.0	+140 00.0	19 20 18.1	246	21			
Huahuka	- 8 55.0	+139 32.0	19 21 38.0	246	21			
Hivaoa	- 9 45.0	+139 00.0	19 22 06.2	248	24			
Archipielago De Colón (Page 19)								
Fernandina	- 0 23.0	+ 91 32.0	21 36 20.8	255	149			
Villamil, Isabela	- 0 56.0	+ 90 59.0	21 36 56.0	256	150			
San Salvador	- 0 16.0	+ 90 40.0	21 37 52.3	255	150			
Santa María	- 1 20.0	+ 90 28.0	21 37 32.5	257	150			
Santa Cruz	- 0 38.0	+ 90 23.0	21 38 06.4	255	150			
Española	- 1 27.0	+ 89 40.0	21 38 45.1	257	151			
San Cristóbal	- 0 52.0	+ 89 27.0	21 39 27.1	255	150			
Peru (Page 20)								
Chiclayo	- 6 47.0	+ 79 50.0	21 48 01.7	261	156			
Trujillo	- 8 06.0	+ 79 02.0	21 48 01.1	262	156			
Chimbote	- 9 04.0	+ 78 34.0	21 47 53.3	264	157	22 51 29.3	38	29
Casma	- 9 30.0	+ 78 18.0	21 47 52.7	264	157	22 51 01.1	71	33
Culebras	- 9 53.0	+ 78 13.0	21 47 44.4	265	157	22 50 52.0	101	
New Plymouth, New Zealand	-39 03.8	-174 04.4	.. ..	...	...			
Wellington, New Zealand	-41 17.1	-174 45.9	.. ..	...	...			
Hilo, Hawaii	+19 42.0	+155 04.0	20 28 16.0	170	260			
Acapulco, Mexico	+16 51.0	+ 99 56.0	21 38 18.7	225	137			
Mexico, Mexico	+19 25.0	+ 99 10.0	21 44 46.1	219	135			
Tonantzintla, Mexico	+19 02.0	+ 98 18.8	21 45 45.7	220	135			
Managua, Nicaragua	+12 06.0	+ 86 18.0	21 56 20.0	230	142			
San José, Costa Rica	+ 9 59.0	+ 84 04.0	21 56 56.4	233	143			
Panama, Panama	+ 8 57.0	+ 79 30.0	22 01 36.4	232	144			
Lima, Peru	-12 06.0	+ 77 03.0	21 47 29.3	268	159			
Kingston, Jamaica	+17 58.0	+ 76 48.0	22 20 19.7	207	130			
Guantanamo, Cuba	+20 09.0	+ 75 14.0	22 29 34.4	197	123			
Bogota, Colombia	+ 4 35.9	+ 74 04.9	22 02 25.9	237	146			
Caracas, Venezuela	+10 30.4	+ 66 55.7	22 16 26.9	218	137			

LOCAL CIRCUMSTANCES

Maximum Eclipse: Universal Time h m s	Magnitude	Sun's Alt. °	Sun's Az. °	Third Contact: Universal Time h m s	P °	V °	Fourth Contact: Universal Time h m s	P °	V °	Duration m s	Width of Path mi
19 41 53.3	1.039	2	61	19 43 00.7	260	29	20 45 49.6	65	202	2 14.7	83
19 42 08.7	1.039	3	61	19 43 09.5	216	346	20 46 17.5	64	202	2 01.6	85
19 43 05.5	0.956	3	60				20 47 25.0	62	201		
19 43 31.4	1.041	10	57	19 44 41.7	270	40	20 51 38.3	64	203	2 20.5	88
19 43 34.5	1.041	10	57	19 44 50.8	257	27	20 51 41.3	64	203	2 32.6	89
19 43 32.5	0.997	11	57				20 51 54.7	65	204		
19 43 29.9	0.987	11	57				20 51 55.6	65	204		
19 43 42.4	0.970	12	56				20 52 35.6	66	204		
20 02 18.5	0.996	35	45				21 25 34.7	63	218		
20 01 12.9	0.989	33	44				21 23 46.9	60	216		
20 03 10.4	1.049	35	44	20 05 02.0	242	18	21 26 56.6	61	218	3 43.2	103
20 03 52.3	1.049	35	43	20 04 27.4	169	306	21 27 58.4	60	219	1 10.3	104
20 04 03.6	0.992	35	42				21 28 13.9	60	219		
20 03 27.0	0.939	34	41				21 26 54.1	57	217		
20 04 39.5	0.985	36	42				21 29 07.4	59	219		
20 05 04.0	0.975	36	41				21 29 41.6	59	219		
20 11 33.5	1.050	41	40	20 13 30.5	226	5	21 39 28.4	61	227	3 54.0	107
20 12 15.8	1.050	42	40	20 14 09.2	262	41	21 40 28.6	62	228	3 46.8	107
20 12 36.8	0.996	41	38				21 40 58.1	60	228		
20 15 50.2	0.974	43	36				21 45 28.8	59	231		
20 16 43.1	0.963	44	35				21 46 39.9	58	232		
20 16 56.0	0.950	43	35				21 46 52.8	58	232		
20 17 56.3	0.943	44	34				21 48 13.4	58	232		
20 19 37.5	0.903	44	32				21 50 08.1	56	233		
20 20 07.4	0.897	44	32				21 50 44.7	55	233		
20 50 26.5	0.980	59	14				22 28 36.7	63	274		
20 51 07.9	0.945	59	12				22 29 12.4	61	273		
20 50 33.8	0.932	58	12				22 28 29.8	61	272		
20 52 25.7	0.937	59	10				22 30 33.7	61	274		
20 52 55.6	0.907	58	9				22 30 49.1	60	273		
22 49 01.0	0.894	17	293				23 51 50.6	92	1		
22 49 18.1	0.905	16	293				23 51 54.2	91	0		
22 49 41.2	0.881	16	293				23 51 53.5	93	2		
22 49 34.8	0.911	16	293				23 51 56.3	91	359		
22 49 48.4	0.889	16	293				23 51 55.6	92	1		
22 50 06.4	0.906	15	293				23 51 58.3	91	0		
22 50 23.5	0.886	15	293				23 51 57.5	93	2		
22 52 56.5	0.952	3	292				.. ..	...	...		
22 52 36.5	0.982	2	292				.. ..	...	...		
22 52 17.3	1.040	1	292	22 53 05.4	312	212	.. ..	...	...	1 36.1	86
22 52 08.8	1.039	1	292	22 53 16.5	279	179	.. ..	...	...	2 15.4	86
22 51 58.9	1.039	1	292	22 53 05.8	249	148	.. ..	...	...	2 13.8	86
19 44 02.1	0.905	1	60				20 47 37.1	59	199		
19 45 35.6	0.837	1	60				20 48 39.4	56	198		
20 55 42.1	0.055	71	80				21 23 49.1	133	231		
22 40 51.3	0.432	33	286				23 36 43.6	118	39		
22 40 55.9	0.343	33	284				23 31 47.5	125	48		
22 41 52.6	0.349	31	284				23 32 39.4	124	47		
22 52 09.4	0.449	16	290				23 42 23.6	119	40		
22 53 27.7	0.490	13	290				23 44 14.4	116	37		
22 54 54.4	0.469	8	291				.. ..	...	...		
.. ..	. ...	..	...				.. ..	...	...		
22 52 58.6	0.161	9	290				23 23 53.6	142	71		
22 52 13.0	0.077	9	290				23 14 07.7	152	82		
22 55 50.2	0.537	1	292				.. ..	...	...		
.. ..	. ...	..	...				.. ..	...	...		

32°S
33°S
34°S
35°S
36°S
178°
177°
176°
175°
174°
173°
172°
171°
Longitude East of Greenwich
19h42m
19h42m
NORTH ISLAND
THREE KINGS ISLANDS
995
North Cape
Cape Maria Van Diemen
1019
Cape Karikari
KAITAIA
KAWAKAWA
MAKOHINE
2545
Reef Pt
Mangonui
Whangaroa
Poor Knights Is
205
Bream Hd
Tapuhi
2063
Whangarei
Little Barrier I
2370
GREAT BARRIER I
2038
Great Mercury I
2926
Hauraki Gulf
Coromandel
1189
AUCKLAND NORTH
AUCKLAND WEST
HOBSONVILLE
WHENUAPAI
AUCKLAND
Mt Eb
3145 ZLOM
Mt Eb
2945 ZLOM
RS 760
HC 880
RS 1865
2945 ZLOM
D.5
D.6
D.7
D.8
D.13
D.27
D.28
D.29
D.30
D.31
D.32
D.33
D.34
D.35
D.36
D.37
D.38
D.39
D.40
D.41
D.42
D.43
D.44
D.45
D.46
D.47
D.48
D.49
D.50
D.51
D.52
D.53
D.54
D.55
D.56
D.57
D.58
D.59
D.60
D.61
D.62
D.63
D.64
D.65
D.66
D.67
D.68
D.69
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D.71
D.72
D.73
D.74
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D.76
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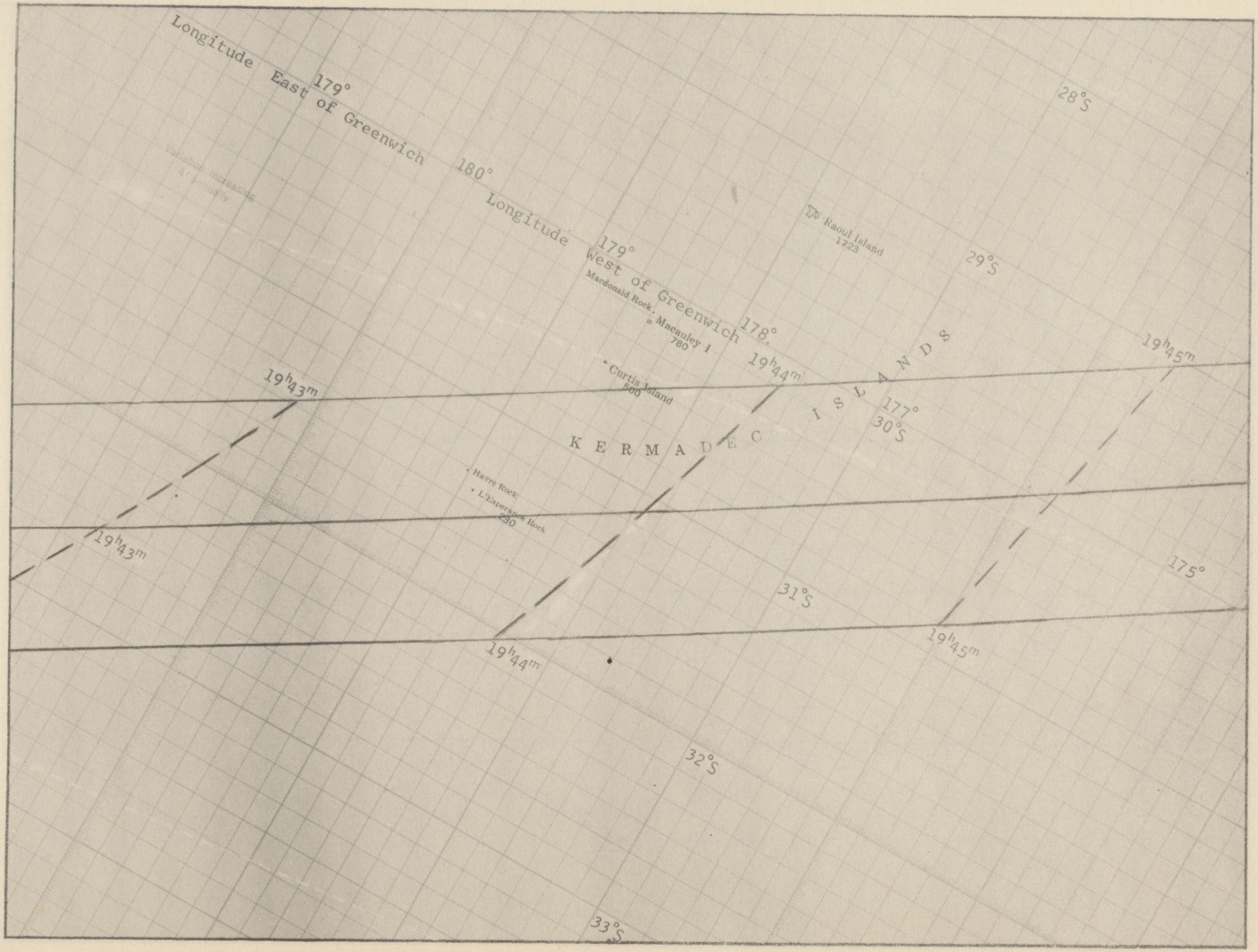
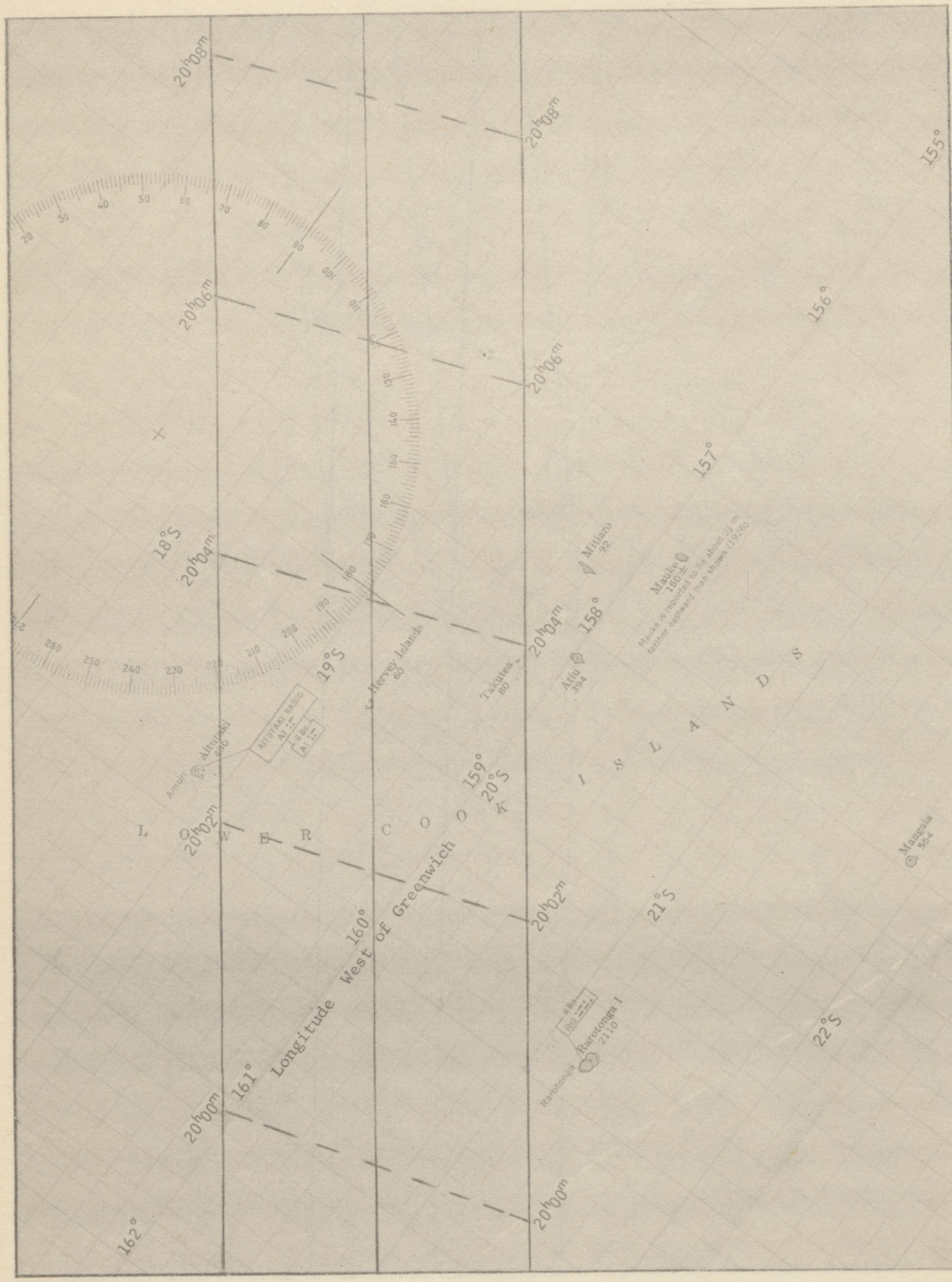
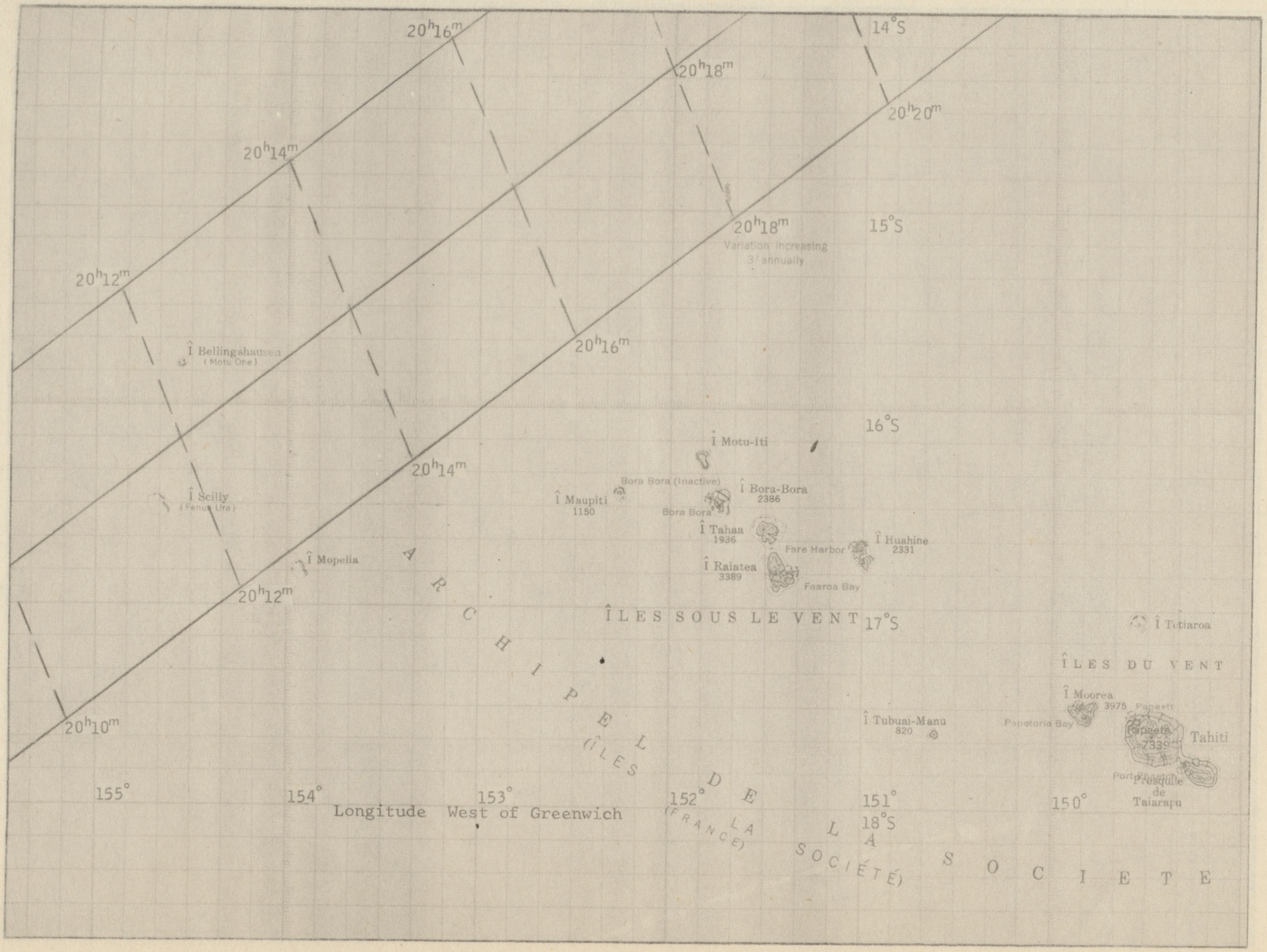
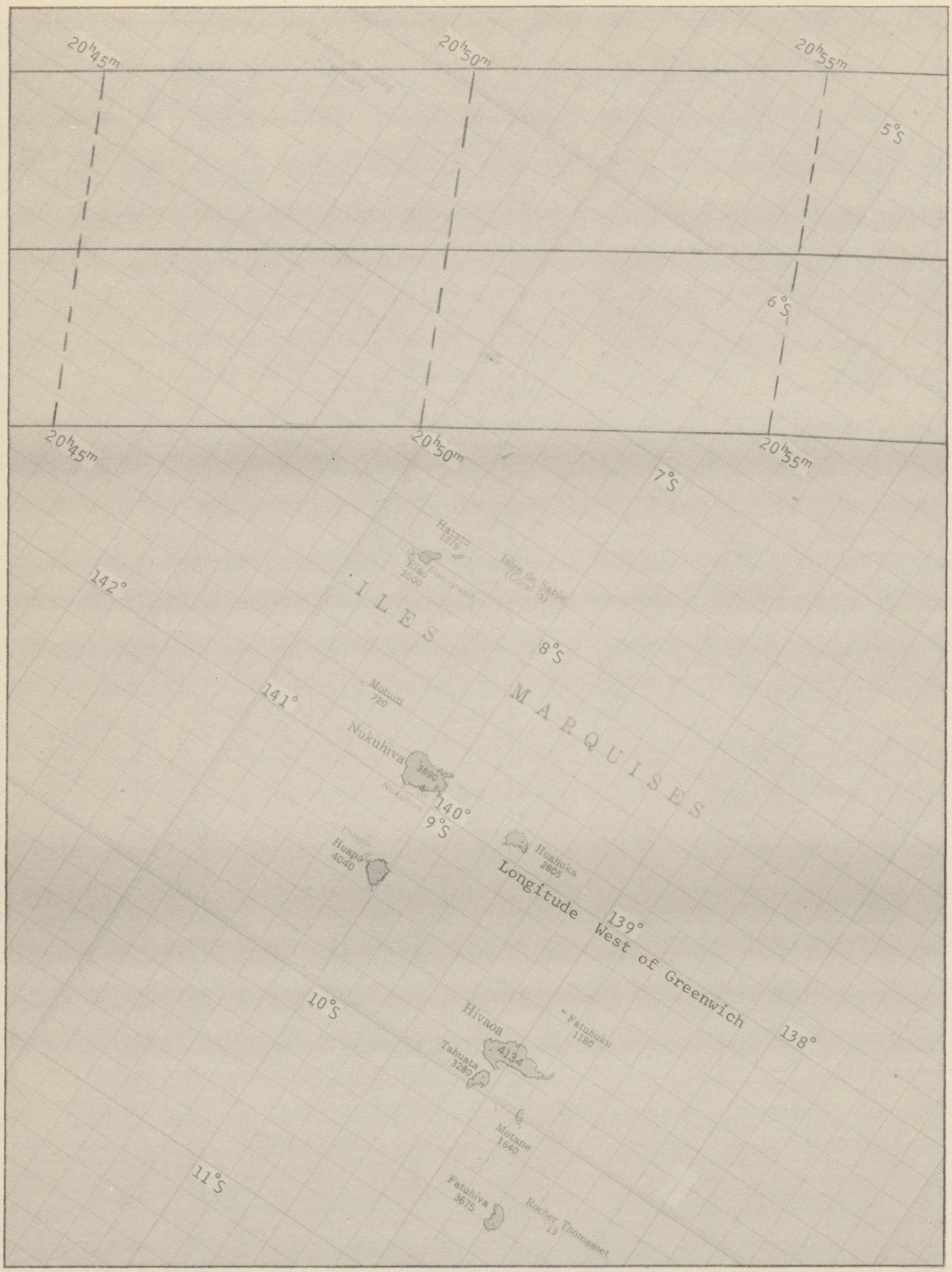
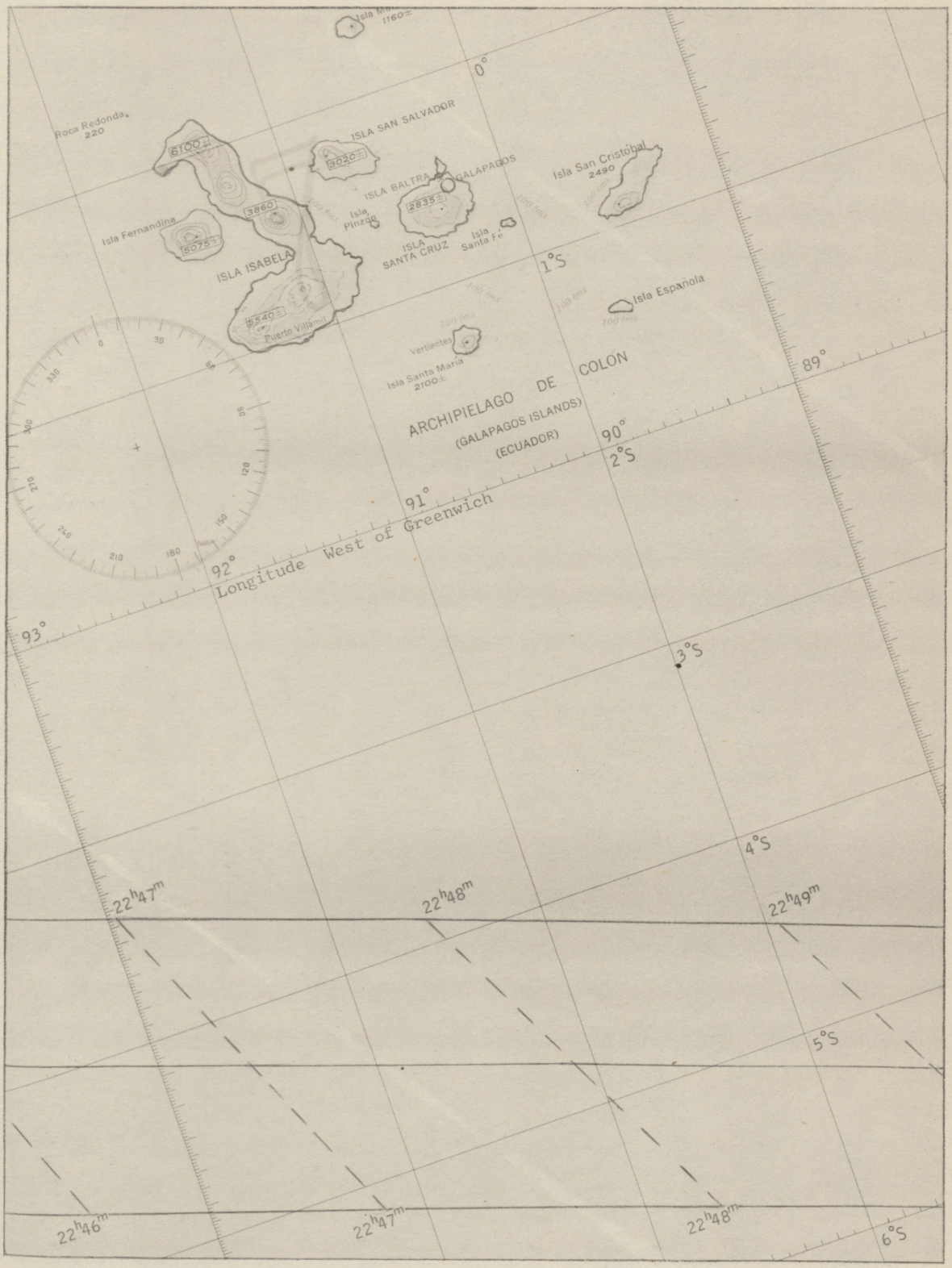
D.79
D.80
D.81
D.82
D.83
D.84
D.85
D.86
D.87
D.88
D.89
D.90
D.91
D.92
D.93
D.94
D.95
D.96
D.97
D.98
D.99
D.100

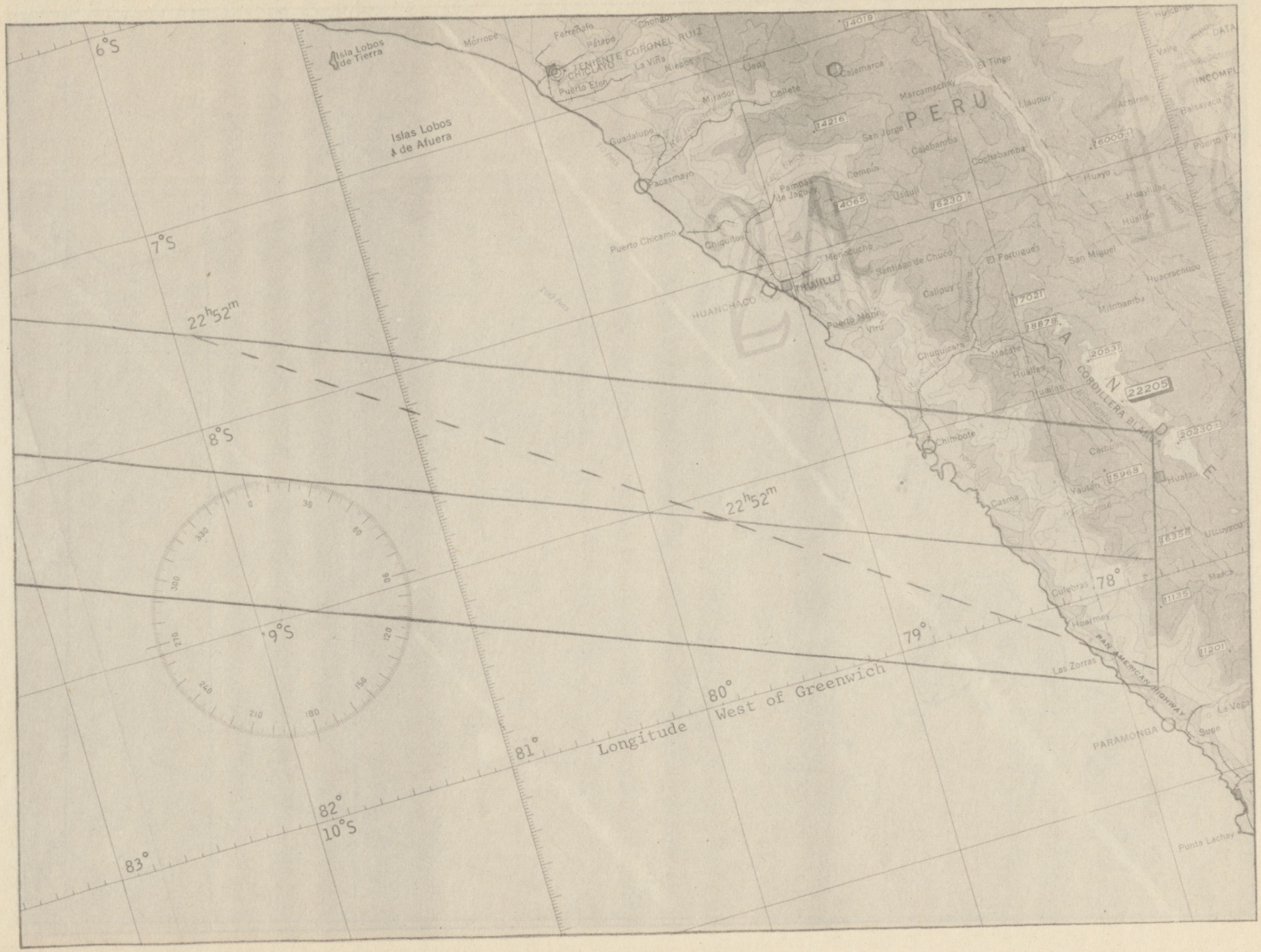

Longitude East of Greenwich
179°
180°
Longitude West of Greenwich
179°
178°
177°
28°S
29°S
30°S
31°S
32°S
33°S
175°
19h43m
19h44m
19h45m
K E R M A D E C
I S L A N D S
Raoul Island
1723
Macdonald Rock
Macauley I
780
Curtis Island
960
Havre Rock
L'Esperance Rock
280

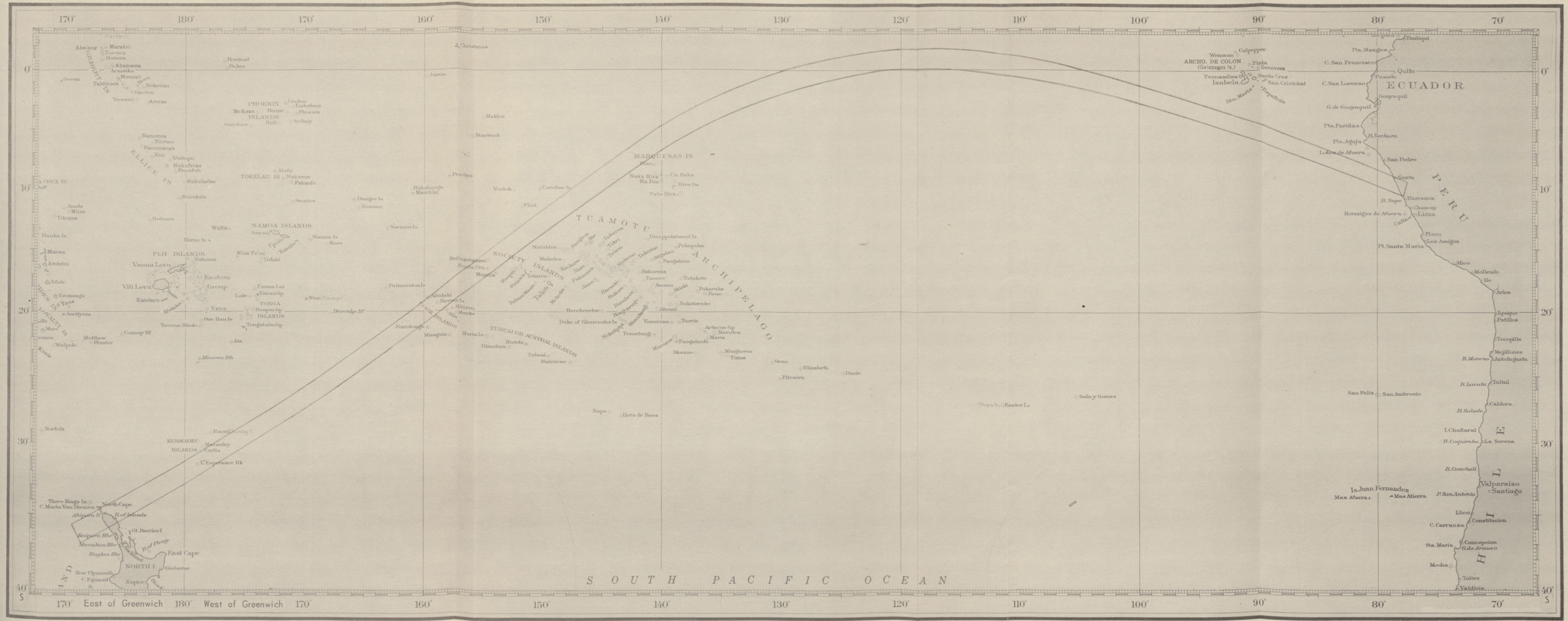

20h08m
20h06m
20h04m
20h02m
20h00m
155°
156°
157°
158°
159°
160°
161°
162°
18°S
19°S
20°S
21°S
22°S
Longitude West of Greenwich
L O W E R C O O K I S L A N D S
Mitiaro 92
Mauke 150±
Mauke is reported to lie about 2½ m farther eastward than shown (1926)
Atiu 394
Takutea 80
Hervey Islands 60
AITUTAKI RADIO
Aitutaki 430
Amuri
Mangaia 554
Rarotonga I 2110
Rarotonga


20h16m
20h18m
20h20m
20h14m
20h12m
20h10m
14°S
15°S
16°S
17°S
18°S
20h18m
Variation increasing
3' annually
Î Bellingshausen
(Motu One)
Î Scilly
(Fenua Ura)
Î Mopelia
Î Motu-Iti
Bora Bora (Inactive)
Î Maupiti
1150
Î Bora-Bora
2386
Bora Bora
Î Tahaa
1936
Fare Harbor
Î Huahine
2331
Î Raiatea
3389
Faaroa Bay
ÎLES SOUS LE VENT
ARCHIPEL DE LA SOCIETE
(ÎLES DE LA SOCIÉTÉ)
Î Tubuai-Manu
820
Î Tetiaroa
ÎLES DU VENT
Î Moorea
3975
Papeete
Papetoria Bay
Papeete
7339
Tahiti
Port
Presqu'île
de
Taiarapu
155°
154°
153°
152°
151°
150°
Longitude West of Greenwich
(FRANCE)


20h45m
20h50m
20h55m
5°S
6°S
7°S
8°S
9°S
10°S
11°S
142°
141°
140°
139°
138°
Hatatu
1378
Elao
2000
Elao Island
Isles de Sable
(Coral Is)
ILES MARQUISES
Motuiti
720
Nukuhiva
3890
Nukuhiva
Huapu
Huapu
4040
Huahuka
2805
Longitude West of Greenwich
Hivaoa
4134
Fatuhuku
1180
Tahuata
3280
Motane
1640
Fatuhiva
3675
Rocher Thomasset
13


Isla Marchena
1160±
0°
Roca Redonda
220
ISLA SAN SALVADOR
6100±
3020±
ISLA BALTRA
GALAPAGOS
Isla San Cristóbal
2490
3860
Isla Pinzón
2835±
Isla Fernandina
5075±
ISLA SANTA CRUZ
Isla Santa Fé
ISLA ISABELA
1°S
Isla Española
5540±
Puerto Villamil
Vertientes
Isla Santa María
2100±
ARCHIPIELAGO DE COLÓN
(GALAPAGOS ISLANDS)
(ECUADOR)
89°
90°
2°S
91°
92°
Longitude West of Greenwich
93°
3°S
4°S
22h47m
22h48m
22h49m
5°S
22h46m
22h47m
22h48m
6°S


6°S
7°S
8°S
9°S
10°S
22h52m
22h52m
78°
79°
80°
81°
82°
83°
Longitude West of Greenwich
Isla Lobos de Tierra
Islas Lobos de Afuera
Mórrope
Pátapo
Chongoyape
TENIENTE CORONEL RUIZ
CHICLAYO
La Viña
Puerto Eten
Niepos
Jaen
Cajamarca
Marcarmachay
El Tingo
Llaupuy
Arbiras
Cutervo
Pomahuaca
Tingo
Cochabamba
Huayo
Huayllabe
Huallón
Huacrachuco
Mitohamba
Puerto Pizana
Guadalupe
Pacasmayo
Pampas de Jaguey
Dompin
Usquil
San Jorge
Chilete
Puerto Chicamo
Chiquitoy
Menocucho
Santiago de Chuco
El Portugués
San Miguel
TRUJILLO
HUANCHACO
Callpuy
Puerto Malabrigo
Virú
Chuquicara
Macate
Huallas
Huaylas
CORDILLERA BLANCA
Chimbote
Casma
Yaután
Huaraz
Culebras
Hoarmey
Las Zorras
PARAMONGA
Supe
La Vega
Punta Lachay
PERU
14019
14216
14065
16230
17031
18878
20531
22205
20230
15968
14358
11135
11201


170° 180° 170° 160° 150° 140° 130° 120° 110° 100° 90° 80° 70°
0°
10°
20°
30°
40° S
SOUTH PACIFIC OCEAN
TUAMOTU ARCHIPELAGO
SOCIETY ISLANDS
MARQUESAS IS
TUBUAI OR AUSTRAL ISLANDS
SAMOA ISLANDS
TONGA ISLANDS
FIJI ISLANDS
COOK ISLANDS
PHOENIX ISLANDS
TOKELAU IS
ELLICE Is
GILBERT IS
NEW HEBRIDES
NEW CALEDONIA
LOYALTY IS
NORFOLK I
KERMADEC ISLANDS
NEW ZEALAND
NORTH I
ECUADOR
PERU
CHILE
ARCHO. DE COLON (Galapagos Is.)
Juan Fernandez Is
Mas Afuera
Mas Afuera
Easter I
Sala y Gomez
Christmas
Tabuaeran
Abaiang
Marakei
Tarawa
Makin
Abamama
Aranuka
Nonouti
Onotoa
Tabiteuea
Nukunau
Arorae
Tamana
Beru
Ocean
Ibecinat
Baker
Howland
Jarvis
Canton
Enderbury
Phoenix
McKean
Birnie
Gardner
Hull
Sydney
Malden
Starbuck
Penrhyn
Nanumea
Niutao
Nanumanga
Nui
Vaitupu
Nukufetau
Funafuti
Nukulaelae
Atafu
Nukunon
Fakaofo
Rakahanga
Manihiki
Danger Is
Nassau
Suwarrow Is
Flint
Caroline Is
Vostok
Palmerston Is
Wallis
Horne Is
Futuna
Alofi
Uvea
Niue Fo'ou
Niue (Savage)
Mamua Is
Rose
Swains
Norfolk
Rotuma
Aunuu
Mitre
Tikopea
Banks Is
Maewo
Ambrim
Efate
Erromango
Tana
Aneityum
Matthew
Hunter
Walpole
Kunie
Minerva Rfs
Conway Rf
Torres Is
Mota
Vanua Levu
Viti Levu
Kandavu
Eastern Group
Lau
Vatoa
Ono I Lau Is
Tuvana Bhoko
Fanua Lai
Vavau Gp
Tongatabu Gp
Ata
Beveridge Rf
Aitutaki
Herveys Is
Mitiero
Manke
Rarotonga
Mangaia
Maria Is
Rimatara
Rurutu
Tubuai
Raivavae
Rapa
Bots de Bass
Duke of Gloucester Is
Herchevetue
Ahunui
Nukutavake
Pukaruha
Reao
Tatakoto
Amanu
Anuanuraro
Hereheretue
Tureia
Vanavana
Tematangi
Nukutipipi
Morane
Fangataufa
Actaeon Gp
Maruhena
Maria
Mangareva
Timoe
Oeno
Elizabeth
Ducie
Pitcairn
Henderson
Rekareka
Takume
Pukapuka
Disappointment Is
Takaroa
Takapoto
Tikei
Tekoto
Makatea
Angatau
Fangahina
Raraka
Niau
Fakarava
Anaa
Matahiva
Hao
Bow
Makatea
Reao
Pukarua
Hereheretue
Mururoa
Marutea
Nukutipipi
Morane
Fangatauta
Tureia
Vanavana
Ahunui
Nukutavake
Rekareka
Takume
Pukapuka
Fangahina
Angatau
Tatakoto
Amanu
Anuanuraro
Hereheretue
Duke of Gloucester Is
Ua Huka
Nuku Hiva
Ha Pou
Hiva Oa
Fatu Hiva
Caroline Is
Vostok
Flint
Makatea
Matahiva
Hao
Bow
Takaroa
Takapoto
Tikei
Tekoto
Disappointment Is
Pukapuka
Fangahina
Angatau
Takume
Rekareka
Tatakoto
Amanu
Anuanuraro
Pukaruha
Reao
Nukutavake
Ahunui
Hereheretue
Tureia
Vanavana
Fangatauta
Actaeon Gp
Maruhena
Maria
Mangareva
Timoe
Morane
Oeno
Elizabeth
Ducie
Pitcairn
Henderson
Rapa
Bots de Bass
Sala y Gomez
(Rapa Nui) Easter I
Wenman
Culpepper
Pinta
Genovesa
Fernandina
Isabela
Santa Cruz
San Cristobal
Sta. Maria
Espanola
Tumbiqui
Pta. Mangles
C. San Francisco
Quito
C. San Lorenzo
Pasado
Guayaquil
G. de Guayaquil
Pta. Pariñas
R. Seekura
Pta. Aguja
La Eos de Afuera
San Pedro
Santa
Barranca
R. Supe
Chancay
Lima
Callao
Hormigas de Afuera
Pisco
Dos Amigos
Pt. Santa Maria
Alico
Mollendo
Ilo
Arica
Iquique
Patillos
Tocopilla
Mejillones
Antofagasta
R. Moreno
R. Izevata
Taltal
San Felix
San Ambrosio
Caldera
R. Salado
I. Chañaral
R. Coquimbo
La Serena
R. Conchali
Valparaiso
Santiago
P. San Antonio
Llico
Constitucion
C. Carranza
Sta. Maria
Concepcion
G. de Arauco
Mocha
Tolten
Valdivia
Three Kings Is
C. Maria Van Diemen
North Cape
Ahipara B
Bof Islands
Gt. Barrier I
Whangaroa Hbr
Mangonui Hbr
Bay of Islands
Bay of Plenty
Whangaroa Hbr
East Cape
NORTH I
Gisborne
New Plymouth
C. Egmont
Napier
Hawke Bay
L'Esperance Rk
Raoul (Sunday I)
Curtis
Macauley
East of Greenwich
West of Greenwich